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4. The bombing programs discussed in Alternative B, particularly the interdiction of the port of Haiphong, could cause serious concern to the Hanoi leadership. Their reaction would depend, however, on the effectiveness of the mining program and the success of alternate methods of supply. Since none of these programs is estimated to be capable of reducing the flow of military and essential economic goods below necessary levels, Hanoi's determination to persist in the war will continue.

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(29 May 67)

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27 May 1967

## MEMORANDUM

SUBJECT: Evaluation of Alternative Bombing Programs

1. This memorandum evaluates two alternative bombing programs:

Alternative A: To concentrate the bombing of North Vietnam on the lines of communication in the Panhandle Area (Route Packages I, II, and III) and to terminate bombing in the remainder of North Vietnam unless there occurred reconstruction of important fixed targets which have been destroyed by prior raids or unless new military activities appeared.

Alternative B: To terminate the bombing of fixed targets not directly associated with LOC's in Route Packages VIA and VIB and simultaneously expand the armed reconnaissance operations in those sectors by authorizing strikes on all LOC's, excepting only those in an eight-mile circle around the center of Haiphong. This program would include continuous strikes against MIG aircraft on all airfields. Further, the program would involve two variations:

1. A program which prohibits strikes against ports and port facilities.
2. A program which includes every effort to deny importation from sea.

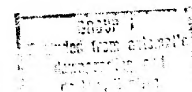
2. The evaluation considers these alternative programs to assess the extent to which:

- a. they will reduce the flow of men and material to the South,
- b. they will affect the losses of US pilots and aircraft,
- c. they will affect the risk of increased military or political pressure from the Soviet Union and/or Red China.

The Movement of Men and Supplies to South Vietnam

Neither of the proposed bombing programs can be expected to reduce the flow of men and supplies to the South. Alternative A would undoubtedly increase the costs of maintaining the logistic system and would result in some further degrading of its capacity. But the effects would be so slight that no reduction in the flow of supplies below their present levels could

be expected. Alternative B would apparently diminish the interdiction effort against the logistics target system in Route Packages I, II, and III so it would be counter-productive in terms of reducing the flow of men and supplies to the South.



The judgment that interdiction campaigns cannot reduce significantly North Vietnam's capability to support its forces in the South is based on the results of the Rolling Thunder to date and the nature of the logistics target system.

During the period January 1966-April 1967, the logistics target system included in Route Packages I, II, and III has been on the receiving end of about 70 percent of the attack sorties flown in the Rolling Thunder program. Despite the intensity of the attack, the North Vietnamese now have a greater capacity to move men and supplies than they did when the bombing started.

We estimate, based on performance to date, that the actual movement of supplies from North Vietnam into Laos and South Vietnam during the 1966-1967 dry season will be greater than it was during the 1965-1966 dry season. The volume of supplies moved by trucks through the Mu Gia Pass route alone will exceed that moved last season. In addition, the North Vietnamese are moving supplies along Routes 137/912. There is no ~~intelligence~~ reporting on this movement, but if the route is being used to the same proportion of its capacity as the Mu Gia route, the volume of supplies available for stockpiling in Laos or for movement to South Vietnam during the current dry season could be as much as 15,000 tons or about four times greater than the amounts to South Vietnam through Laos 1965-1966 dry season.

The small expectations associated with the interdiction campaign are more evident when actual traffic is compared to route capacity. During the 1965-1966 dry season, truck traffic on Route 15 through Mu Gia pass averaged 23 trucks daily or about 85 tons of supplies a day. At this level of traffic the route was being used to less than 20 percent of its capacity of 450 tons a day. Since the 1965-1966 dry season the capacity of Route 15 has been increased to about 750 tons a day. Traffic during the current <sup>dry season</sup> amounts to an average of 23 trucks a day or about 70 tons of supplies. This level of traffic is less than 10 percent of the current capacity of Route 15.

The ability of North Vietnam to maintain and to improve its logistic network is impressive. The route capacities of almost all the major

Highways in military Region IV (MRIV)\* have increased during the past year as shown in the following tabulation:

<u>Route Number</u>	<u>Dry Season/Wet Season Capacity In Short Tons per Day</u>	
	<u>August 1966</u>	<u>May 1967</u>
1A	900/100	950/120
15	450/100	740/250
101	610/120	610/120
137	450/100	500/100

During 1966 the North Vietnamese also were able to build 340 miles of alternate routes in MR IV to augment routes 1A and 15.

The routes in Laos have not been maintained as well as those in North Vietnam. The capacity of Route 12, which leads from Mu Gia Pass has been reduced by about 25 percent as compared to the last dry season, and the capacity of Route 23 has been reduced by 40 percent. Despite these reductions, the capacity of other roads has been maintained and in some cases increased, and the logistic network has been improved overall. During 1966, for example, more than 400 miles of new road were constructed in Laos, more than doubling the road network. During the first three months of 1967 at least 30 by-pass roads and 30 truck parks or refueling areas were constructed in Laos. The net result is that the North Vietnamese have retained the same capacity they had last year to move at least 400 tons of supplies a day to the end of the motorable routes along the border of North Vietnam.

It is difficult to predict the extent to which the interdiction program proposed under Alternative A could reduce the capacity of the road system in Route Packages I, II, and III. A case study of our bombing in North Vietnam indicates that the maximum reduction achieved in bombing roads was about 25 percent. Even if a more intensive program were to double this rate of interdiction, the capacity remaining on the two major routes into Laos -- 15 and 137 -- would still be from at least five times greater than that required to move supplies at the 1966-1967 dry season rates.

\* Military Region IV accords roughly with Route Packages I and II.

The major effect of the program outlined in Alternative A would be to increase the requirements for manpower and vehicles needed to sustain the movement of supplies. It is estimated that an intensified interdiction program would raise the manpower requirement by about 20,000-25,000 persons. This would be a 30 percent addition to the manpower now used to maintain logistic routes in MR IV and in Laos. The added burden could be met easily. North Vietnam has an estimated 220,000 full-time and 100,000 to 200,000 part-time workers engaged in repair, reconstruction, dispersal and transport programs. An unknown but significant share of these workers could be relocated as the bombing program proposed in Alternative A would lessen the manpower requirement in other areas of North Vietnam.

North Vietnam presently uses an estimated 2,000 trucks to handle the entire logistic effort based in MR IV -- for the forces around HME, the forces in Northern Laos, the forces in the Panhandle of Laos and the forces in South Vietnam. Less than 400 trucks are used to move supplies in Laos to the border of South Vietnam. Even if the interdiction program were to double the rate at which vehicles are destroyed or damaged, these losses could be replaced from the existing inventory/<sup>of trucks,</sup> estimated at 12,000-13,000 vehicles, or by increased imports from Communist countries. During the past 16 months imports of trucks totaled at least 4,400 vehicles and estimated losses to air attack were about 3,400. Thus the truck inventory increased by about 1,000 vehicles during the period.

In summary, the excess capacity on the road networks in Route Packages I, II, and III provides such a deep cushion that it is almost certain that no interdiction program can neutralize the logistics target system to the extent necessary to reduce the flow of men and supplies to South Vietnam below their present levels.

#### The Movement of Supplies to North Vietnam

Alternative B is a bombing program designed to neutralize the Hanoi-Haiphong area, insofar as it is North Vietnam's principal logistical base, <sup>by cutting off imports of</sup> war supporting materials. The program is presented in two variants: (1) a program concentrating on the land LOC's in Route Packages <sup>Via</sup> IIA and <sup>Vib</sup> IIB with strikes against all airfields; and (2) the same program expanded to

include strikes against ports and port facilities, and the mining of the ports.

If Alternative B is taken literally, it has two major deficiencies. First, it omits attacks against the Hanoi - Lao Cai rail line, and the parallel road systems in the northwest (Route Package V). Second, it would preclude restrikes against military and industrial fixed targets other than airfields.

Neither of the programs proposed under Alternative B could obstruct or reduce the import of military or war-supporting materials sufficiently to degrade North Vietnam's ability to carry on the war. This is true even if the programs were assured to include attacks on lines of communications in the Northwest.

North Vietnam now has the capacity to move about 14,000 tons of goods a day on its major rail, sea road and inland water import routes. It has been estimated previously that an optimum program against all means of land and water transportation could interdict at most 70 percent of North Vietnam's transport capacity to import, reducing it from 14,000 tons a day at present to about 3,900 tons. Interdiction to this extent would reduce the present level of goods imported by about 25 percent. North Vietnam presently imports an average of 5,300 tons of goods daily. If imports were kept to manageable levels by eliminating all but essential military and economic goods, daily imports would average about 3,000 tons a day. This amount of traffic could be handled even if the capacity of North Vietnam's transport system were reduced by 70 percent.

Imports at this level would not be sufficient to continue operations of modern industrial plants or to restore operation of those which have received extensive bomb damage. The economy would be reduced to its essential subsistence character, but those modern sectors such as transportation, construction, communications and other elements essential to support the military establishment in North Vietnam and in the South could be sustained.



Losses of US Pilots and Aircraft

The concentration of bombing in Route Packages I, II, and III, as outlined in Alternative A, would, in the short term, be less costly in terms of losses of US pilots and aircraft. This is apparent in the statistics for combat losses of aircraft during the first four months of 1967. A total of 80 US aircraft were lost during this period. Only 18 aircraft, or 22 percent of the total, were lost in combat over Route Packages I, II, and III, although about 70 percent of all attack sorties are flown over this area.

When it becomes apparent to the North Vietnamese that the bombing is concentrated in Route Packages I, II, and III and that a virtual sanctuary exists in most other parts of the country, they can be expected to increase their air defenses and to move more SAMs into the region. A greater defense would increase US aircraft losses although this area probably would never be as heavily defended as Route Packages VIa and VIb.

Alternative B, particularly in the variant calling for attacks on port facilities and other targets in the Haiphong area, would be the most costly in terms of losses of US pilots and aircraft. A total of 28 aircraft or 35 percent of the total, were lost in combat during attacks against targets located in Route Package VI during January-April 1967. The extension of the Rolling Thunder program to attacks in the Hanoi-Haiphong area has resulted in an extremely high loss rate. During January-April 1967, the US air forces operating over all of North Vietnam experienced a loss rate of 0.33 percent. During the period 10 April-14 May 1967 the forces attacking targets in the immediate Hanoi-Haiphong area had a loss rate of 2.6 percent.

In addition to resulting in greatly increased aircraft losses, the concentration of attack on the Hanoi-Haiphong area will result in a sharp decline in the recovery of downed pilots because of the heavy defenses and greater population in the area. Although statistics on recovery of downed pilots by Route Package area are not available, the recovery rate has declined markedly as the air campaign extended into the Hanoi-Haiphong area. During 1966 the recovery rate was 40 percent. During the first four months of 1967 the recovery rate declined to 23 percent.

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